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the preferred choice for **disaster recovery, data backup** and **data migration**

CBMR

**Cristie Bare Machine Recovery**

# User Guide

## For Linux

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Version 7.1.1


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# 1 Introduction

**Cristie Bare Machine Recovery** (CBMR) for Linux provides disaster recovery capability for Linux based systems.

It is possible to recover the original system to the same or dissimilar hardware. To protect a system, backups can be taken periodically, along with configuration information, which includes details of hard disks, network interfaces, etc.

This Guide shows the user how to save system configuration information, backup and recover a Linux machine using CBMR. More detailed information is available from `man` pages for the CBMR components. The `man` pages are available after installation of CBMR.

This guide is for CBMR for Linux version 7.1.1 only.

***Note: CBMR can be used independently or in conjunction with Tivoli Storage Manager (TSM).***

This guide describes how to:

- Create the Backup Location
- Save Configuration Data
- Perform a Backup
- Perform a Disaster Recovery

## 1.1 Document conventions

The following typographical conventions are used throughout this guide:

| | |
|---|---|
| `/etc/passwd` | represents command-line commands, options, parameters, directory names and filenames |
| Next > | used to signify clickable buttons on a GUI dialogue |
| ***Note:*** | describes something of importance related to the current topic |

## 1.2 Limitations

There are limits to what this version of CBMR for Linux will support. It will NOT support:

- Platforms other than Intel x86/x64 or PPC
- Multi-boot operating systems
- Incremental and differential backups

## 1.3 Further Information

Further information and advice on using CBMR may be found in the **Cristie Knowledge Base** at:

http://support.cristie.com/cgi-bin/kb.cgi

# 2 System Requirements

CBMR for Linux can be installed on a x86, x86_64 or PPC Linux machine.

***If using TSM, the system should have TSM API client version 5.5 or later already installed.***

A minimum memory of 1GB RAM is required for booting the recovery environment and running a recovery.

CBMR Version 7.1.1 supports the following Linux platforms:

- RedHat Enterprise 4.x to 6.5.
- SUSE 10.x to SUSE 11 SP3.

At the time of release the TSM Client versions supported are 5.5.0.6 to 7.1.0.0 inclusive.

At the time of release the TSM Server versions supported are 5.5.x.x to 7.1.0.0 inclusive.

The CBMR installation is currently available in English only.

Before CBMR can be used it must also be correctly licensed. Cristie provides a 30 day trial license with the product.

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# 3 Overview Of Using CBMR For Disaster Recovery

Cristie CBMR will recover your Linux machine in the event of a disaster. It can backup to tape drives, files, IBM Tivoli Storage Manager (TSM) and cascaded devices.

The process may be run either from the Command line or a GUI interface. Backups can be taken periodically to reflect the changing content of the machine. In order to be able to recover this data, the machine configuration information must also be saved. This includes details of hard disks and network interfaces.

CBMR recognises three components needed for the recovery of any computer. Each of these elements will change at a different rate and is therefore best backed up on separate schedules. They are:

- **Configuration data** - defining the structure of the machine and its network characteristics
- **DR Backup data** - required to recover the operating system on that structure
- **Application data** - required to recover the applications and user data on top of the basic operating system

The main steps when performing the DR backup for the first time are:

- **Create a Backup Location**
- **Save Configuration Data**
- **Perform a DR Backup**

The main steps when performing a recovery of the operating system are:

- **Boot the Cristie Recovery Environment**
- **Establish Network connection**
- **Load Configuration Data**
- **Recreate the disk structure**
- **Restore the OS files from the DR Backup**
- **Reboot to the recovered OS**

Thereafter you should recover the Application data.

# 4 Performing a DR Backup

The process of performing a Data Recovery backup requires three steps:

• **Create a Backup Location** - which defines where the backup data will be stored. See Creating a Backup Location

• **Save the Configuration Data** - see Saving Configuration Data

• **Perform a DR Backup** - to the storage device. See Performing the DR Backup

## 4.1 Creating a Backup Location

A **Backup Location** is a definition of the entity to which you will backup data.

CBMR can backup to tape drives, tape libraries, virtual tape drives (files), TSM Nodes and cascaded locations. The simplest way of creating a device is to use the GUI. However, you may also create the definition with a text editor.

The Backup Location definition is used in both the DR Backup and the Configuration Data. It only needs to be created once.

### 4.1.1 Creating a Backup Location using a Command Line Interface

It is unusual to define storage devices without the GUI. However, provided that you do not need to enter an encrypted password, you may use a text editor to create a **devices.ini** file.

Only TSM and File Backup Locations can be handled this way. The **devices.ini** file which is located in `/etc/cristie` could be amended or created with entries like:

```
[CBMRLinux]
Class = 4
Path=/mnt/windows/backups/drbackup.vtd
SizeInMB=0
Remote=0
```

However, it is **not** recommended that this be done with an editor. Backup Locations are best defined using the GUI.

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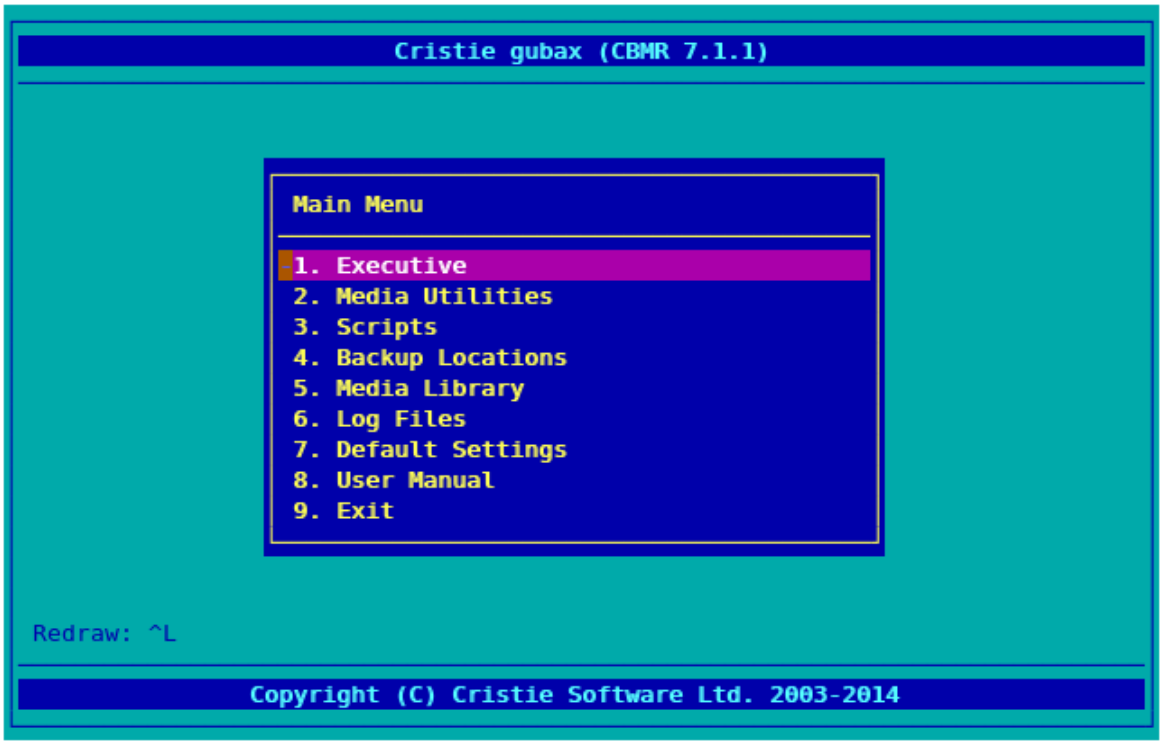
### 4.1.2 Creating a Backup Location using a Graphical User Interface

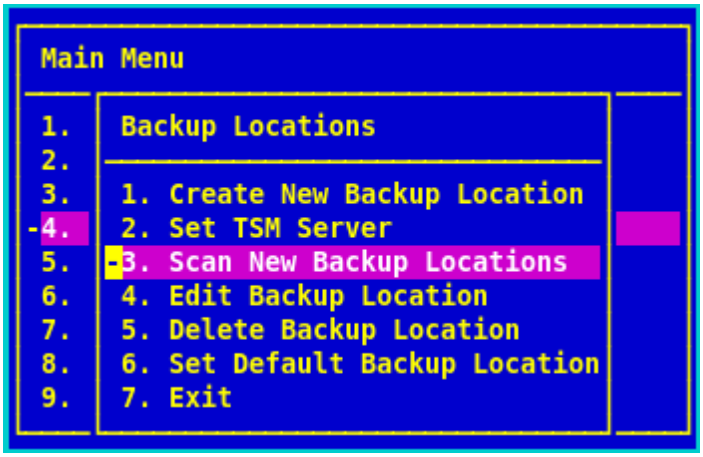
To run GUBAX, type `gubax` in a command line. This will show the main menu:




Before you start a DR Backup or save your Configuration Data, you need to configure a Backup Location to define the location to which the data will be backed up. Select **Backup Locations** from the main menu.

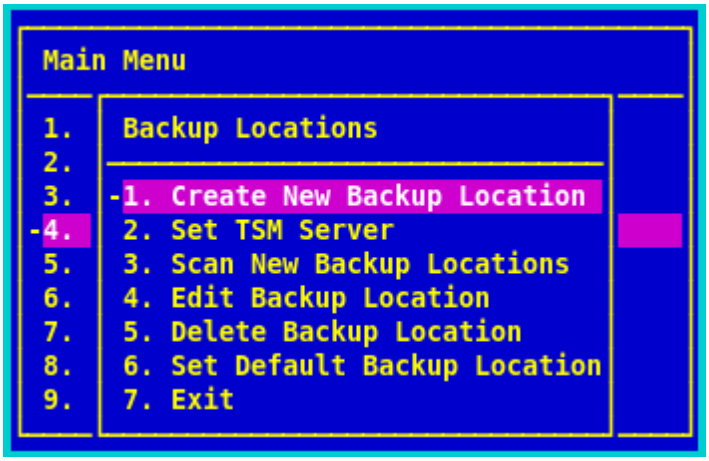
## Tape Drive

If you are using a tape drive, this can be automatically detected by selecting the Scan New Backup Locations option from the **Backup Locations** menu as shown:




Any new devices found will be listed and then be available to choose as a default device.

Other types of device should be configured manually by selecting Create New Backup Location from the Backup Locations menu.

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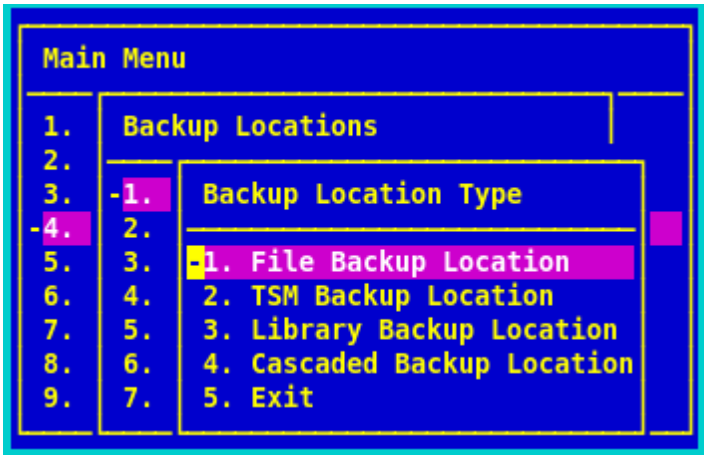
## File Backup Location

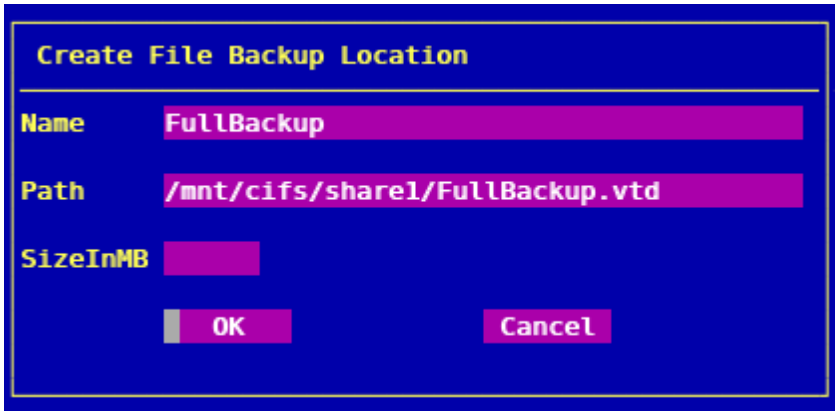
A File Backup Location allows you to save your complete system to a file location of your choice.

If you wish to backup to a file, probably located on a network share, choose File Backup Location.

*Note: creating the file backup location does NOT create the file itself - this is created when you start the first backup.*




Complete the form with your details and select OK to confirm. The entries shown in the example below are for illustration only:




The path, which is case sensitive, defines the file via its mount point (which must already be mounted).

It is recommended that you leave `SizeInMB` blank.

`SizeInMB` will set a maximum size to the file; by leaving this blank it will allow it to expand until it is complete or there is no more space on the disk.

*Note: if you do set the maximum size of the file and the backup and the file reaches that size and needs to write more, you will get the message 'Please mount Volume 1'. There is no way to extend the current file or attach another file and the process should be restarted. If you wish to limit the size of the file because of disk space limitations, then consider creating this as one of several files in a Cascaded Backup Location.*

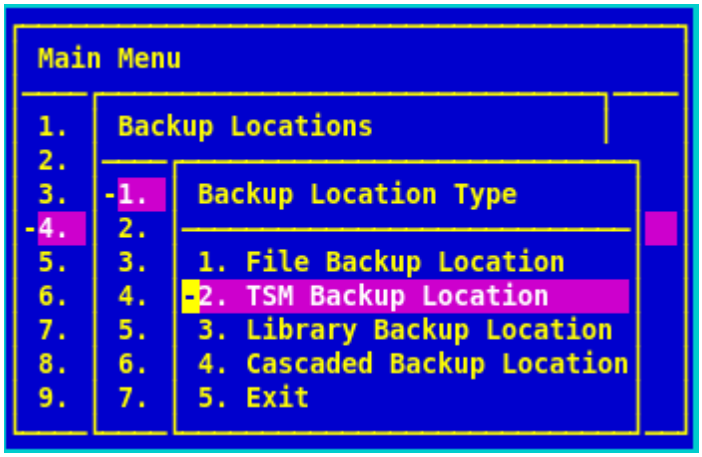
## TSM Backup Location

CBMR can be used in conjunction with TSM to utilize TSMs centralised storage management benifits. CBMR treats a node as though it were a tape. This means that there are some restrictions to the way in which CBMR can be configured and used with TSM.

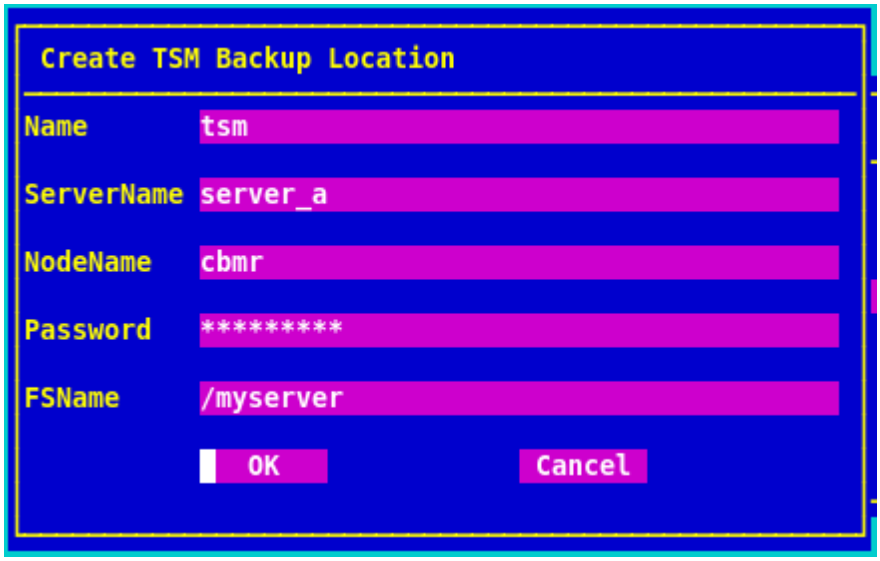
The node must be reserved for sole use by CBMR and may not be shared with any other process, particularly the BA Client. The node must also be set up with the options:

Backup Delete Allowed = Yes
Archive delete Allowed = Yes
Password Expires = 0

If you wish to backup to a node on your TSM server, choose TSM Backup Location from the **Backup Location Type** menu:




Then fill in the form with the device details that apply to your system. The example below is for illustration purposes only:




There is no validity check of the parameters at this time; they will be validated when you attempt the first backup. The Filespace will also be created by the first backup if it does not already exist.

For a TSM Backup Location, you also need to provide connection information for the TSM Server so that it can be accessed. This data is specified in the file `dsm.sys`.

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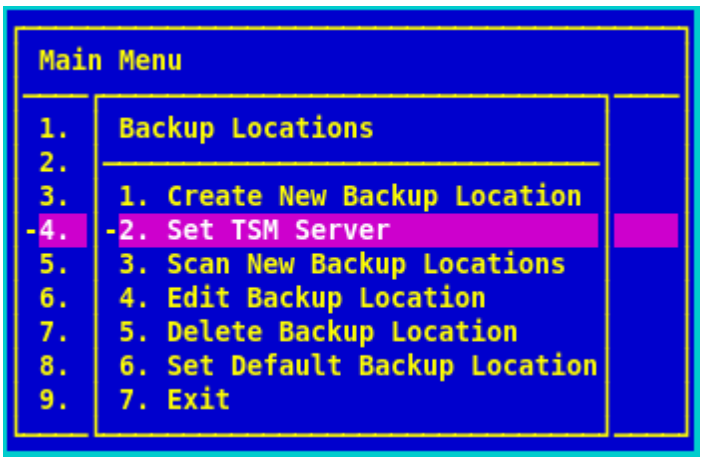
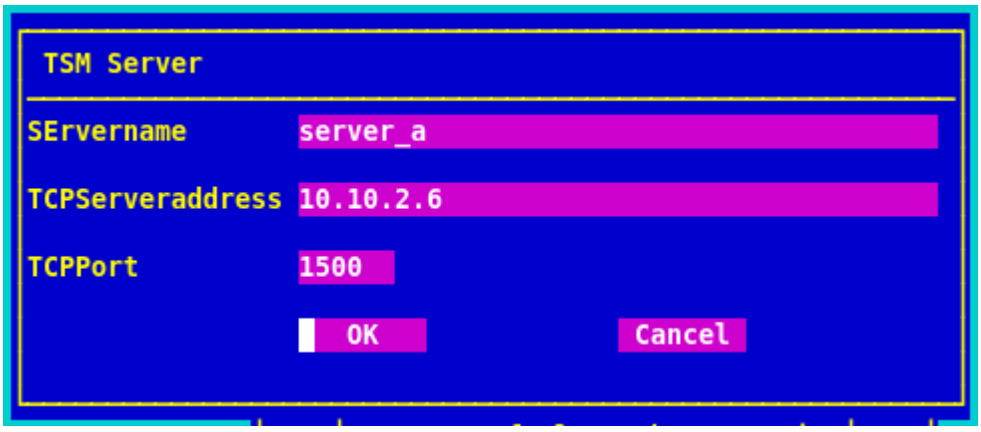
If you have not already created the file, you may do so by selecting Set TSM Server from the menu:




This function will overwrite any existing `dsm.sys` file. Depending on your systems architecture, this file is located in either the `/opt/tivoli/tsm/client/api/bin` or `/opt/tivoli/tsm/client/api/bin64` directory.

The displayed form allows you to specify the basic parameters for connecting to the TSM server over TCP/IP. The parameters are written into `dsm.sys`.

**Ensure that you use the same server name as you used on the TSM Backup Location form.**




## Library Backup Location

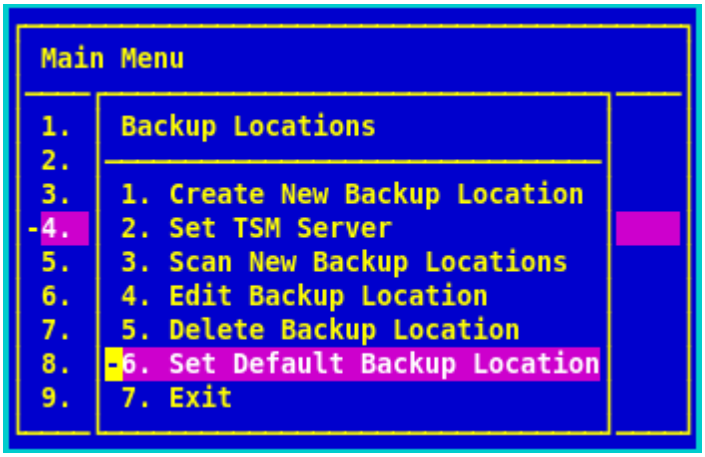
A locally attached tape library can be used as a Storage device. A CBMR library is defined as a drive and a number of tapes. You require the **CBMR Library Support** module to run this.

## Cascaded Backup Location

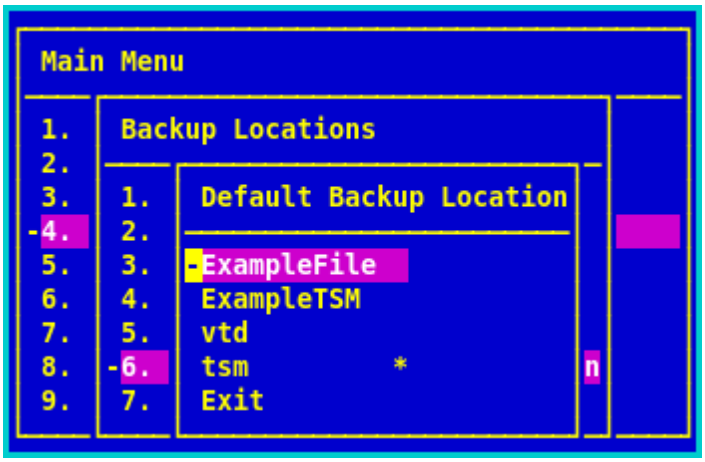
A Cascaded Backup Location is a number of separate Backup Locations that are linked together, so that when the first fills it continues to the second, and so on. Typically one could use this on tape drives or virtual tape drives. In order to create a Cascaded Backup Location, you need first to create individual Backup Locations that you can then cascade. This type is not particularly useful in a CBMR context where speed of recovery is important.

### Default Backup Location

Once you have configured the backup location, you should set it as the default. Do this from the Set Default Backup Location option on the **Backup Locations** menu.




The device name marked with an asterisk (*) is the current default device. Select the device that you want to be the Default and press Enter.




You may check that the selection has taken effect by selecting Set Default Backup Location from the menu.

## 4.2 Saving Configuration Data

Configuration information, including details of disks and network configuration, must be saved for each machine to be recovered. This may be saved to a unique external disk drive for each machine, or to a central configuration store located on a network share.

To save the configuration information for each machine, the command line program `cbmrcfg` is used. The Cristie recommended way to store the configuration is “as part of the backup”. This will save the configuration to a folder on the root file system and automatically included as part of the backup.

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### 4.2.1 Saving Configuration Data Using CBMRcfg

To use the command line configuration saving program, type `cbmrcfg` followed by the required options. The available options for `cbmrcfg` can be shown by typing: `cbmrcfg --help`

Some examples are shown here:
- To save the configuration information as part of the backup, use:

```
cbmrcfg
```

This will cause the configuration data to be recreated and saved along with the backup data when the DR Backup is run.

- To save configuration information from a machine that boots using LILO, use:

```
cbmrcfg -b lilo
```

There is a manual page for cbmrcfg available by typing `man cbmrcfg`

***Note: if you are using a File Backup Location, the share to the location must already be mounted and you must also tell CBMR how to mount it during the recovery process. CBMR can mount "shared" or "File device share location" using SMBFS or NFS.***

***Note2: The File Device Mount Target must be identical to the current entry in the mount table. So if you have mounted the share using an IP address, then the definition below should also use the IP address. If you have mounted it with a hostname, then the definition should also use the hostname. When you decide which method to use, remember that the definition may have to be used in a recovery environment that has no DNS.***

If you do not wish to reveal the password, omit the 'password' parameter and you will be prompted for it when it is needed.

There are many different bootloaders available but by far the most common (on Intel) is **grub**. CBMR detects most bootloaders except elib automatically. The name of the bootloader used by your machine will usually appear briefly when it is booted. **Choosing the wrong bootloader will mean that the recovered machine will not boot.**

Include `cbmrcfg` in your backup script to run every time a backup is performed.

## 4.3 Performing the DR Backup

Files may be backed up from the command line program `ubax` or graphical program `gubax`.

### 4.3.1 Performing a DR Backup using the Command Line Interface

To use the command line backup program `ubax`, you should first configure a storage device. the steps required for this are explained in the previous section 4.1.1 - Creating a Backup Location using a Command Line Interface. This only needs to be done once.

Once you have confirmed that the default backup location is correctly configured, you may back up the machine using the default script by using the following:

```
ubax -b /etc/cristie/scripts/cbmr.scp
```

The **Backup Location** definitions are held in the file `/etc/cristie/devices.ini`. Each location definition starts with the symbolic name of the location eg. `[ExampleLocation]`.

The file `/etc/cristie/ubax.ini` must contain the symbolic name of the default location in the following form:

```
DefStorageDev=”ExampleLocation”
```

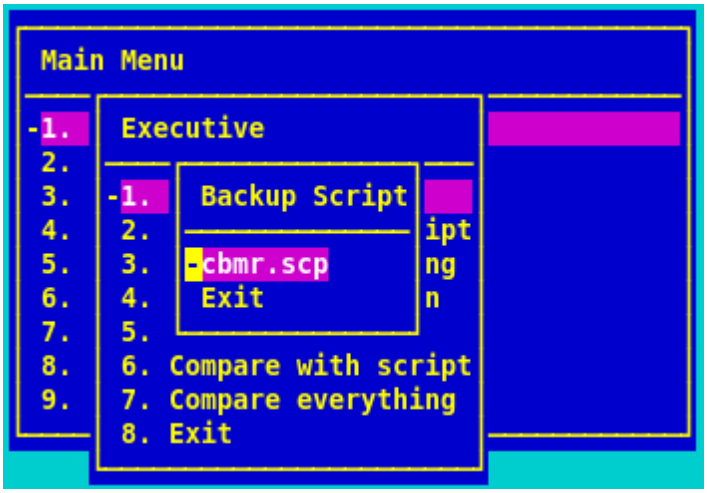
There are many command line options available for `ubax` which are described in the manual page which is available by typing `man ubax`.

### 4.3.2 Performing a DR Backup using the Graphical User Interface

Before you perform a DR backup you need to make sure that you have completed the instructions in Creating a Backup Location.

Type `gubax` from a command line; this will show the main menu.

Select the **Executive** menu and then choose Backup. A list of available scripts is shown:




The default backup script `cbmr.scp` will backup all local file systems.

***Note: if you wanted to include mounted CD ROMs for example, then they would need to be included specifically.***

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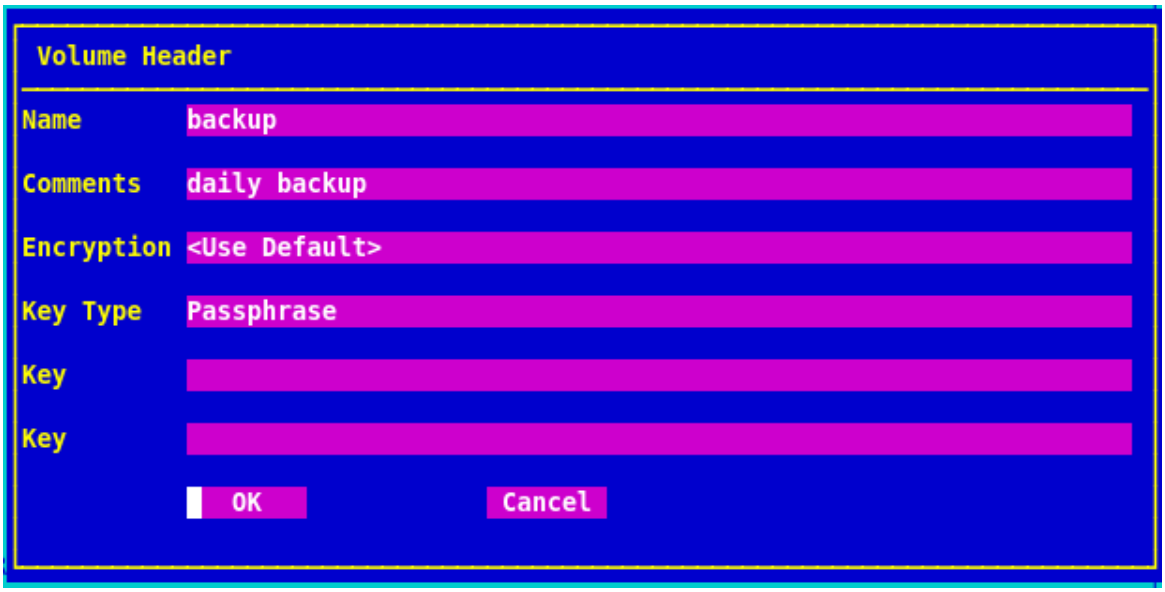
Select the script you require. Then **Volume Header** information can be specified if you wish:




The **Volume Header** information is simply any names or comments that you wish to associate with the backup. If you wish to encrypt the backup, you may toggle through the method of encryption by pressing the up and down arrow keys when you are on the **Encryption** field. You will need to enter a key if you are encrypting your backup.

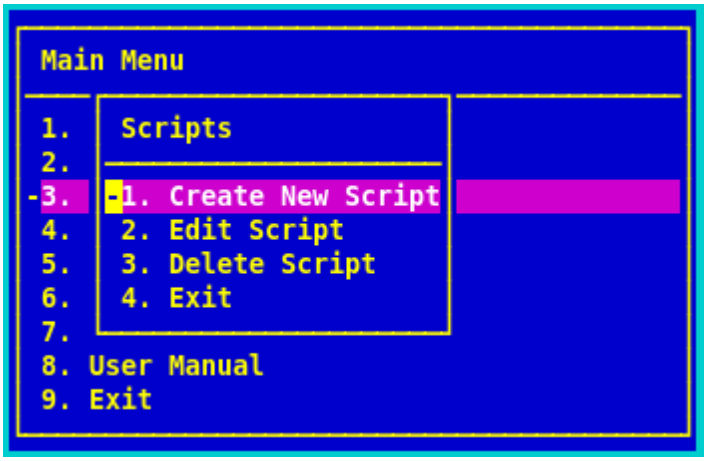
After pressing Enter on **OK**, the backup will begin; an initial screen will be shown. In the example below, the Volume Header information has been left blank:

```
Cristie Software Ltd. CBMR 7.1.1

Connected to backup location 'FullBackup'
Block Size = 512

VOLUME HEADER:
Name = backup
Comments = daily backup
Time Created = Mon Apr 14 11:07:26 2014
Volume Number = 0

Building file list for / /SubDirs
```

The backup completes with a summary message:

```
/var/www/usage
msfree.png (1478)
webalizer.png (1253)
/var/yp
nicknames (185)
/var/yp/binding
Files = 110773
Skipped = 3
Directories = 9105
Bytes = 2599877945
Warnings = 0
Errors = 3

Time taken = 1624 seconds
Press Enter to continue
```

All scripts are located in `/etc/cristie/scripts/`. You can create your own script with the GUI by selecting **Scripts**, then Create New Script. This will open a new script with the vi editor.




## Example Script

`cbmr.scp` will backup the whole machine and contains the following commands:

| Script Text | Meaning |
|---|---|
| `Mode=Overwrite` | Overwrite the previous contents |
| `SNumber=0` | Use dataset 0 |
| `/ /SubDirs` | Backup from/with all subdirectories |

Typically, you would not wish to backup temporary files. These can be excluded by adding the line: `/tmp /Xclude` below the `/ /Subdirs`.

If you wanted to backup a single sub-directory, you should add the following below `/ /Subdirs`:

```
/opt /Xclude
/opt/tivoli
```

and this would just backup the `/tivoli` subdirectory and no others within `/opt`.

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## 4.4 Housekeeping

In order to ensure that you can recover to the latest version of the operating system that was installed on your Linux machine, you must ensure that a fresh DR backup is performed every time the operating system files change.

This is not always possible, so **Cristie** recommend that the DR Backup be performed regularly. However, you should choose a period which reflects the rate of change in your own organisation. Although the configuration data will change less frequently than the operating system, it is a wise precaution to update this regularly. This can be achieved by creating a cron job for your schedule, including `cbmrcfg` in your backup script.

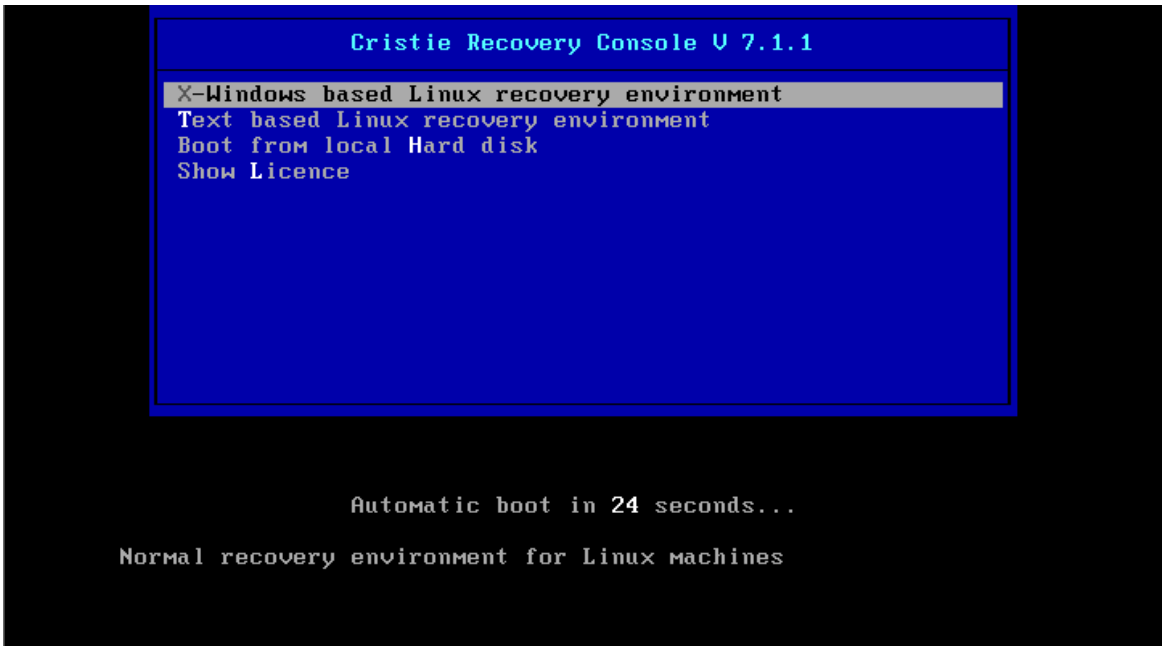
# 5 Performing a Recovery

When a machine has crashed, it can be recovered using the CBMR bootable CD-ROM. This is the same CD from which you installed the software. You should ensure your machine's BIOS is set up to boot from CD-ROM.

The process encompasses the following stages:

- **Boot** into Recovery environment and configure as required
- **Read** Configuration Data from your backup
- **Restore** Files from your backup
- **Load** additional drivers (if necessary)
- **Reboot** into recovered OS

Boot the machine using the CBMR bootable CD ROM or ISO. You will be presented with the screen below:


Cristie Recovery Console V 7.1.1
X-Windows based Linux recovery environment
Text based Linux recovery environment
Boot from local Hard disk
Show Licence
Automatic boot in 24 seconds...
Normal recovery environment for Linux machines

Cristie recommend that you choose the graphical X-Windows recovery environment mode which loads the **Cristie Recovery Console** (CRC).

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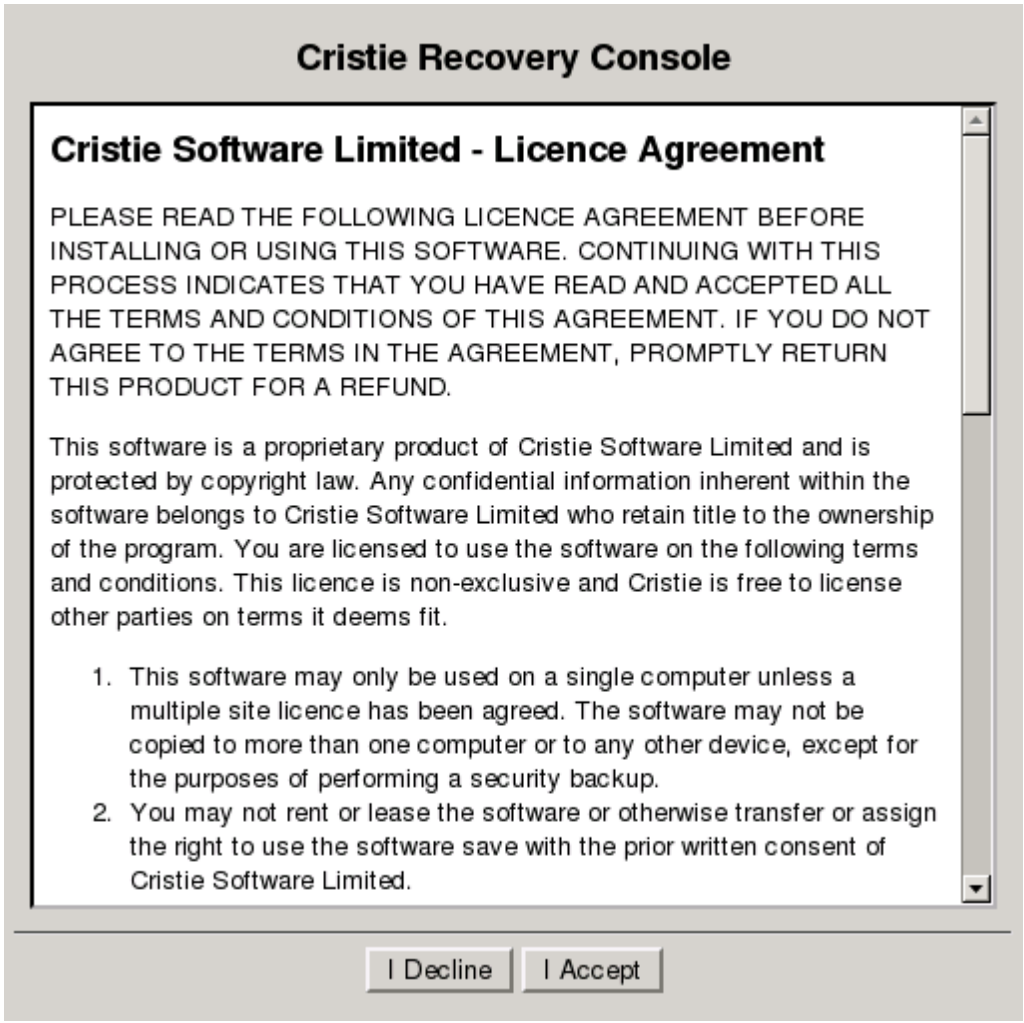
You will be presented with the **Licence** screen. Click I Accept if you agree with the CBMR licencing terms.


Cristie Recovery Console
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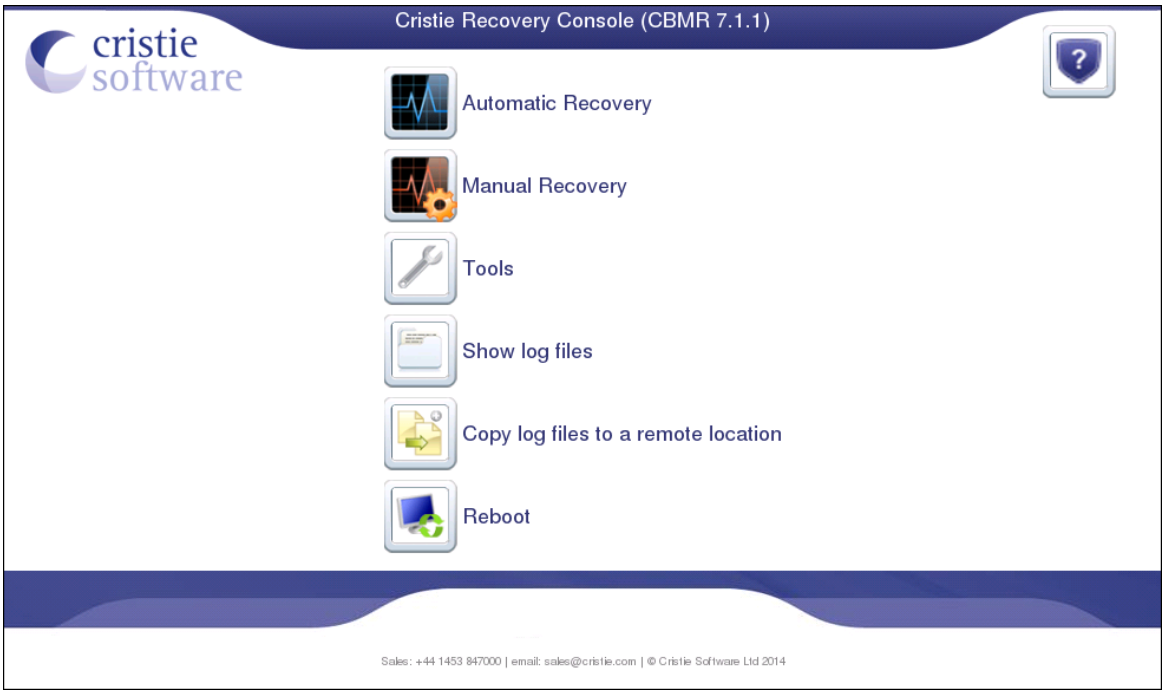
2. You may not rent or lease the software or otherwise transfer or assign the right to use the software save with the prior written consent of Cristie Software Limited.
I Decline
I Accept

You will then see the **Recovery Console** main menu:


Cristie Recovery Console (CBMR 7.1.1)
cristie software
Automatic Recovery
Manual Recovery
Tools
Show log files
Copy log files to a remote location
Reboot
Sales: +44 1453 847000 | email: sales@cristie.com | © Cristie Software Ltd 2014

Cristie recommends using the **Auto Recovery Wizard** option from the **Recovery Console** main menu.

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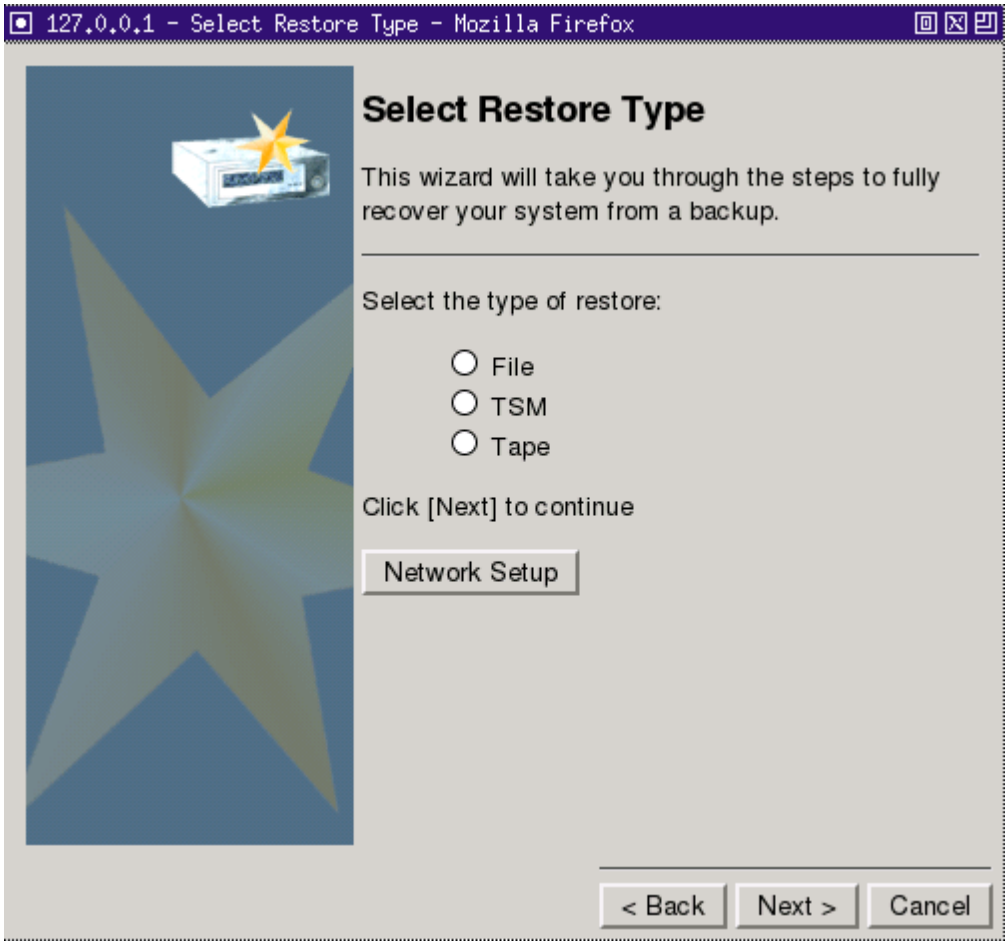
The **New Backup Location Wizard** dialogue box will now show. At this point, you must tell CBMR where your backup file(s) are located. The examples illustrated are those most commonly used - **File Location** and **TSM Location**


127.0.0.1 - Select Restore Type - Mozilla Firefox
Select Restore Type
This wizard will take you through the steps to fully recover your system from a backup.
Select the type of restore:
File
TSM
Tape
Click [Next] to continue
Network Setup
< Back
Next >
Cancel

**File Location** - choose a file location for your backup.

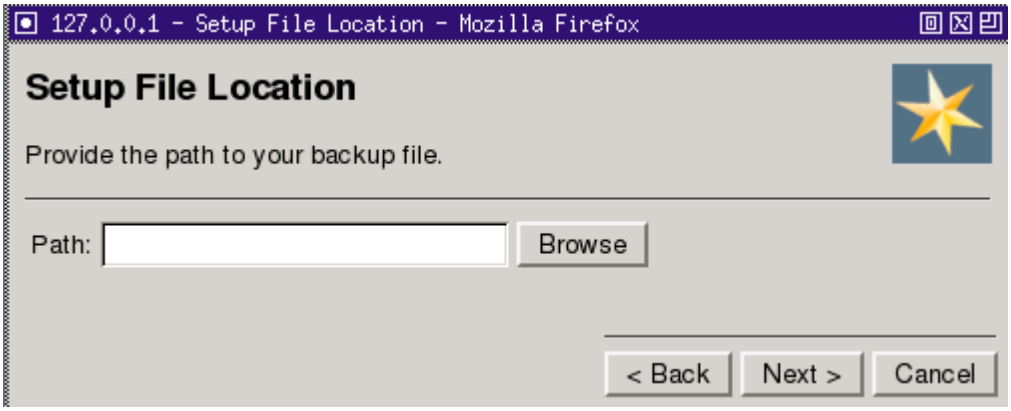
**TSM Location** - choose a TSM location by entering the server and client information.

**Tape Location** - allows you to scan for SCSI or IDE tape devices.

**Network Setup** - defaults to DCHP but can be customised if required.

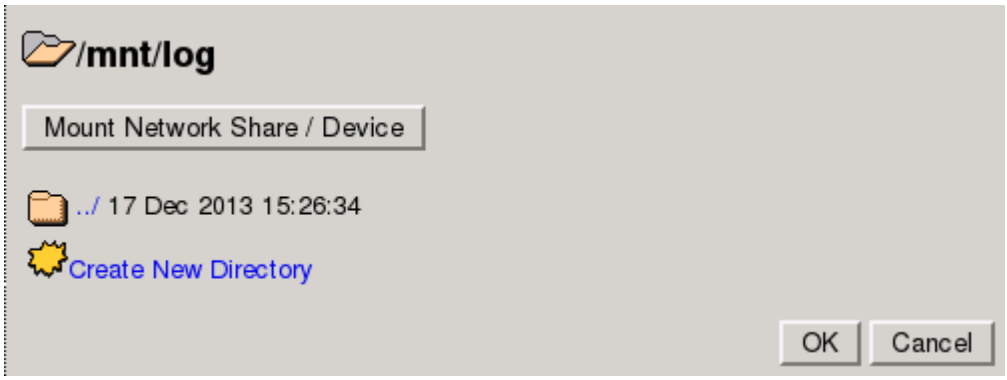
## 5.1 Backup located in a 'File Location'

Enter the location of your backup in the Path: field and click Next > to proceed.

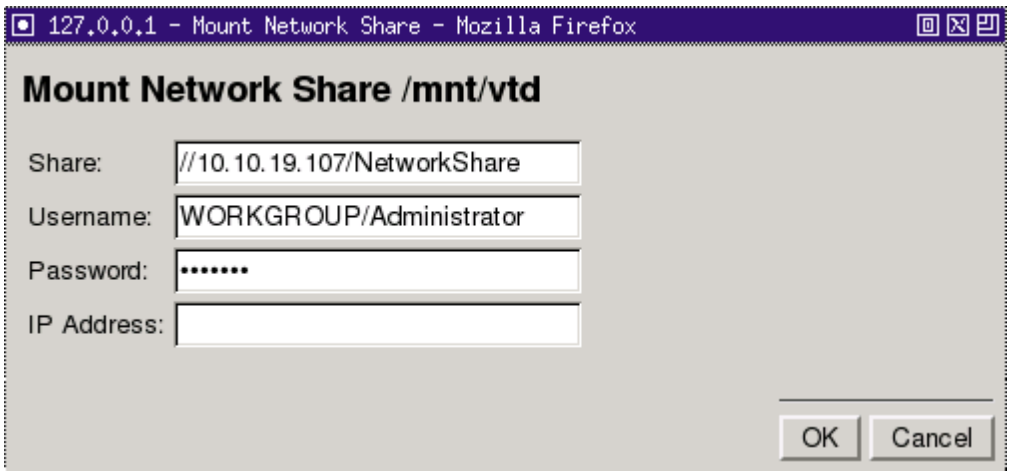



If required, you can locate where your backup file(s) are stored by clicking the Browse button; it is also possible to mount any required network shares.

To mount a new network share, select **Mount Network Share**:




Complete the form with the required details. Click OK to proceed.

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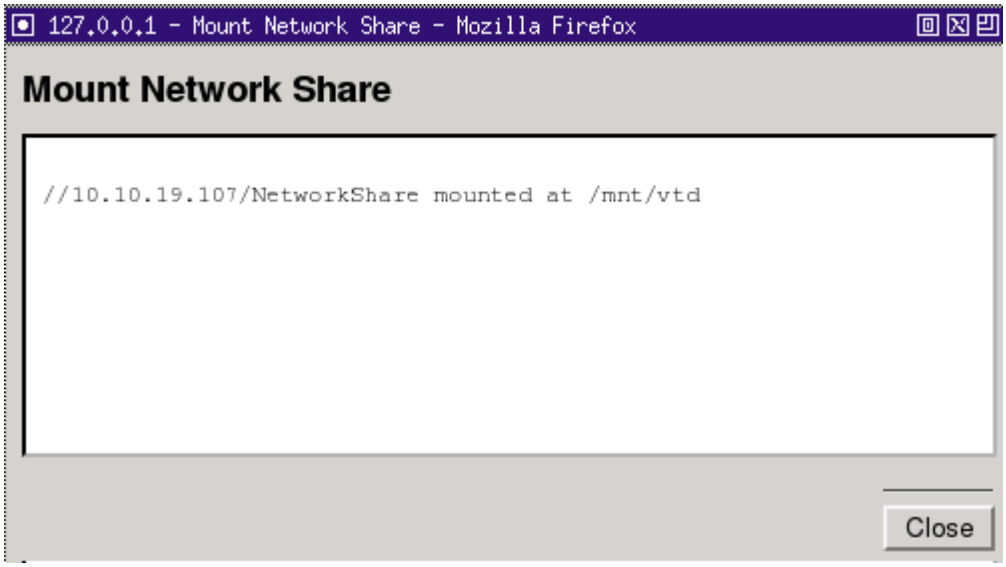
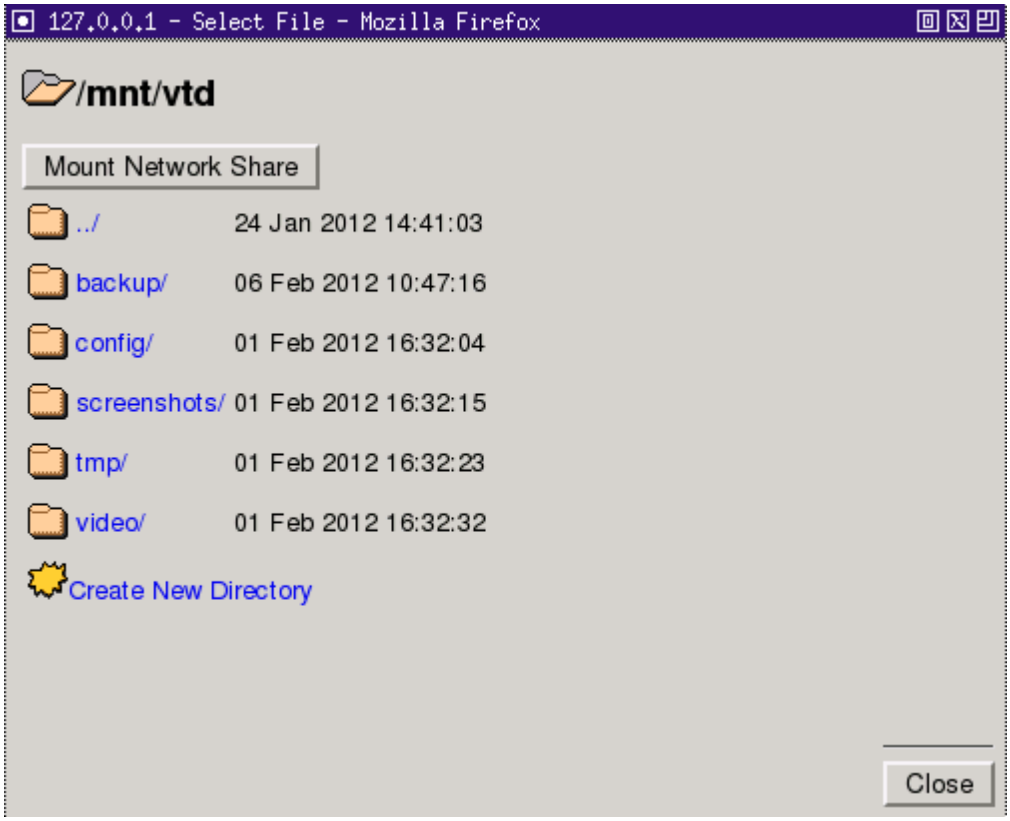
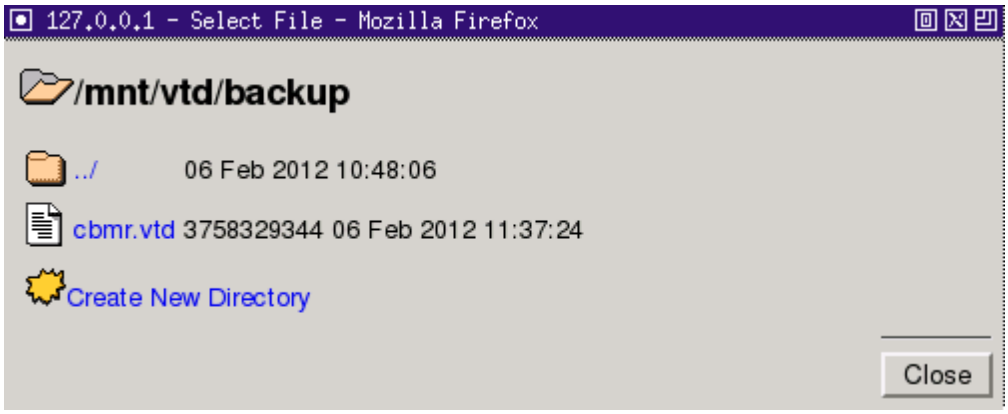
A summary message will then be displayed informing if the network share was mounted successfully.



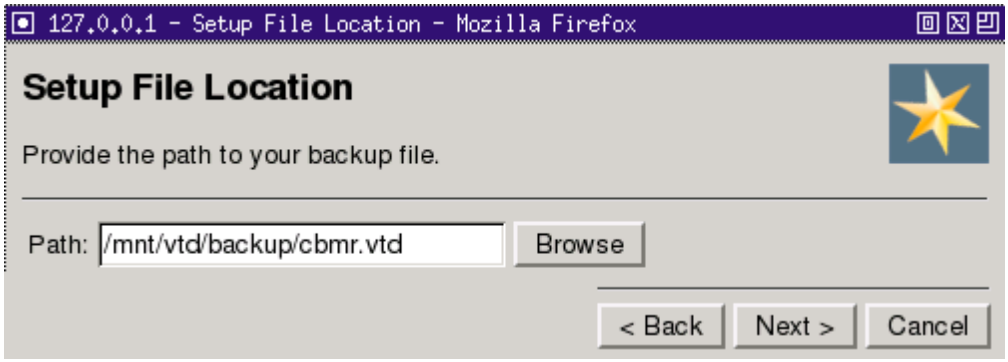

Select Close to continue. The mounted network share details are then displayed:


127.0.0.1 - Select File - Mozilla Firefox
/mnt/vtd
Mount Network Share
../ 24 Jan 2012 14:41:03
backup/ 06 Feb 2012 10:47:16
config/ 01 Feb 2012 16:32:04
screenshots/ 01 Feb 2012 16:32:15
tmp/ 01 Feb 2012 16:32:23
video/ 01 Feb 2012 16:32:32
Create New Directory
Close

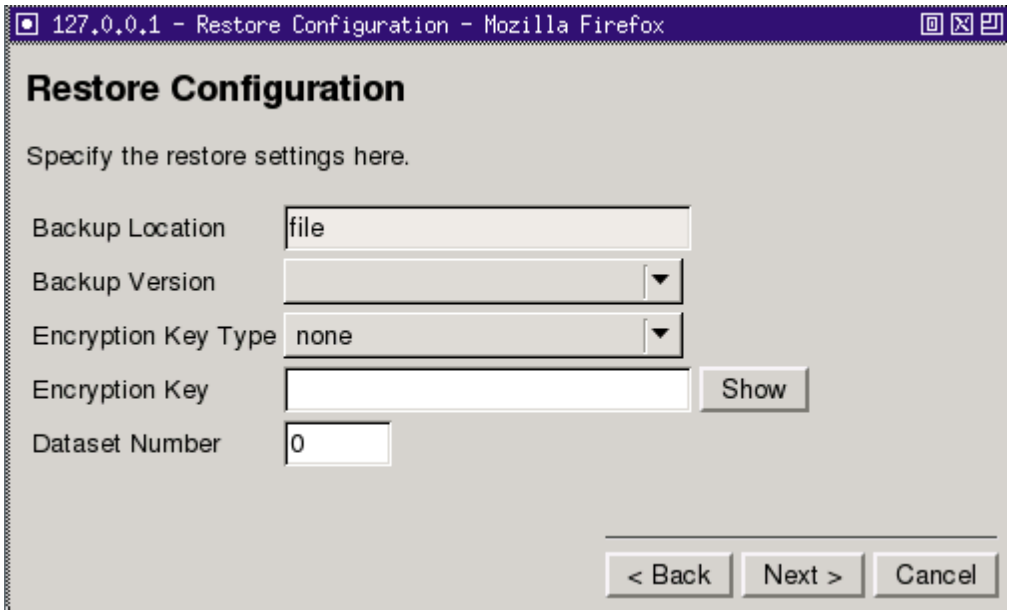
Navigate to the location of your backup and click the required vtd file.




You will then be presented with the **Setup File Location** dialogue box again.




Select Next > to proceed. You will then be presented with the **Restore Configuration** dialogue box:




If the backup is encrypted, you should select the **Encryption Key Type** drop-down menu, select the correct encryption, then enter the correct Encryption Key.

***Note: under normal circumstances you should leave 'Dataset Number' as 0.***

Click Next to continue.

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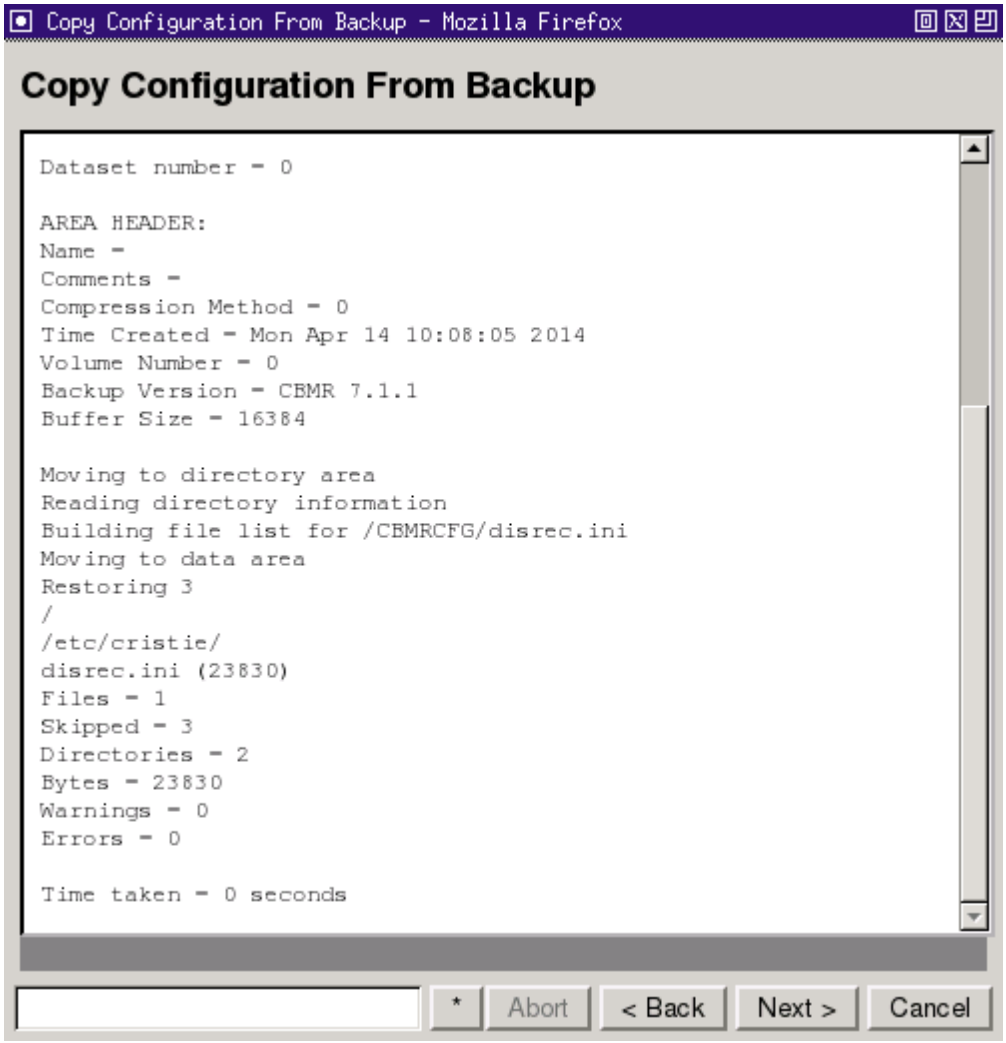
You will then be presented with a screen which summarises the copying of the Configuration from the backup file you just selected:

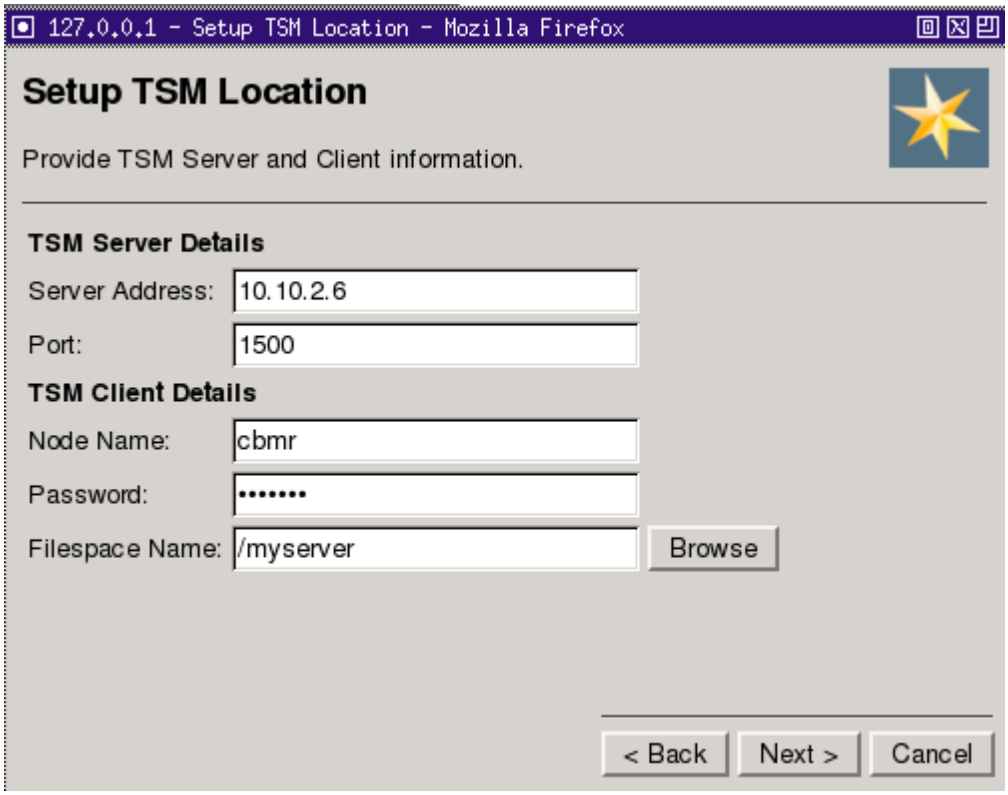



Click Next to continue.

Further details on the Recovery process are described in the section **Continuing the Recovery**.

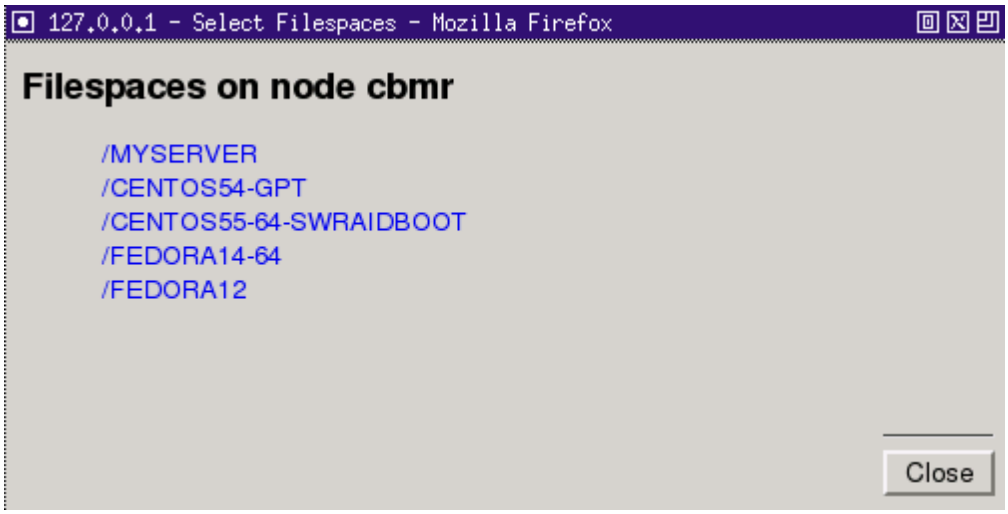
## 5.2 Backup located in a 'TSM Location'

If you have chosen a TSM location for your backup location, you be presented with the **Setup TSM Location** dialogue box.




Fill in all your TSM information - you must complete every field in order to continue. Contact your TSM administrator if you are unsure of any of the required information.

You can enter the TSM Filespace name if you wish, alternatively you can click the Browse button to display a list of available TSM Filespaces:




Click on the TSM Filespace that you wish to apply. Click Next to continue when you are happy the correct TSM Filespace name is specified.

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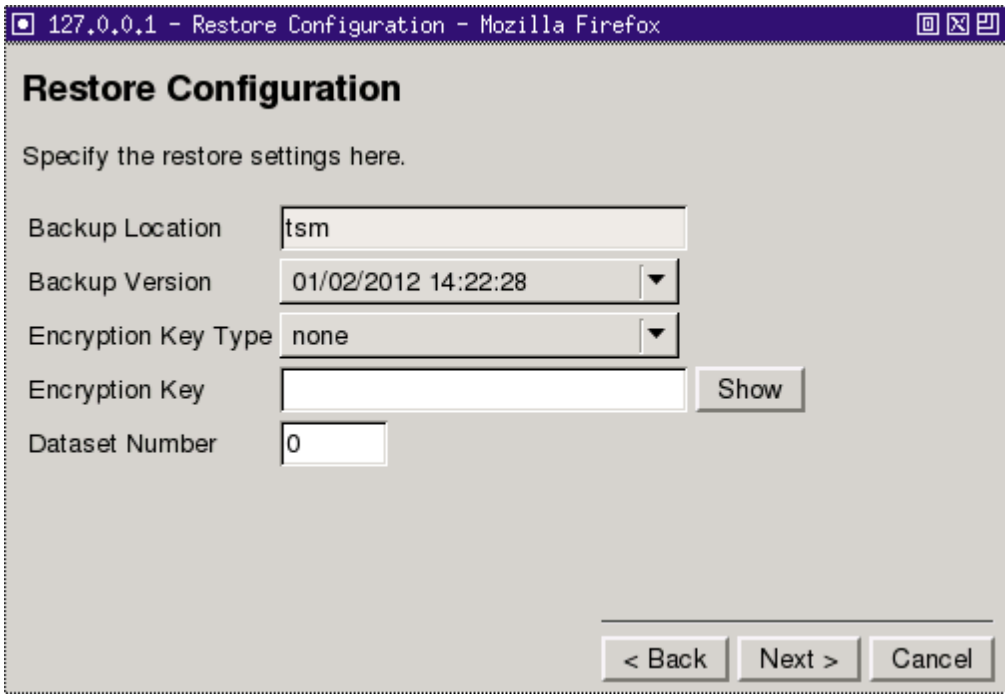
You will then see the **Restore Configuration** dialogue box.



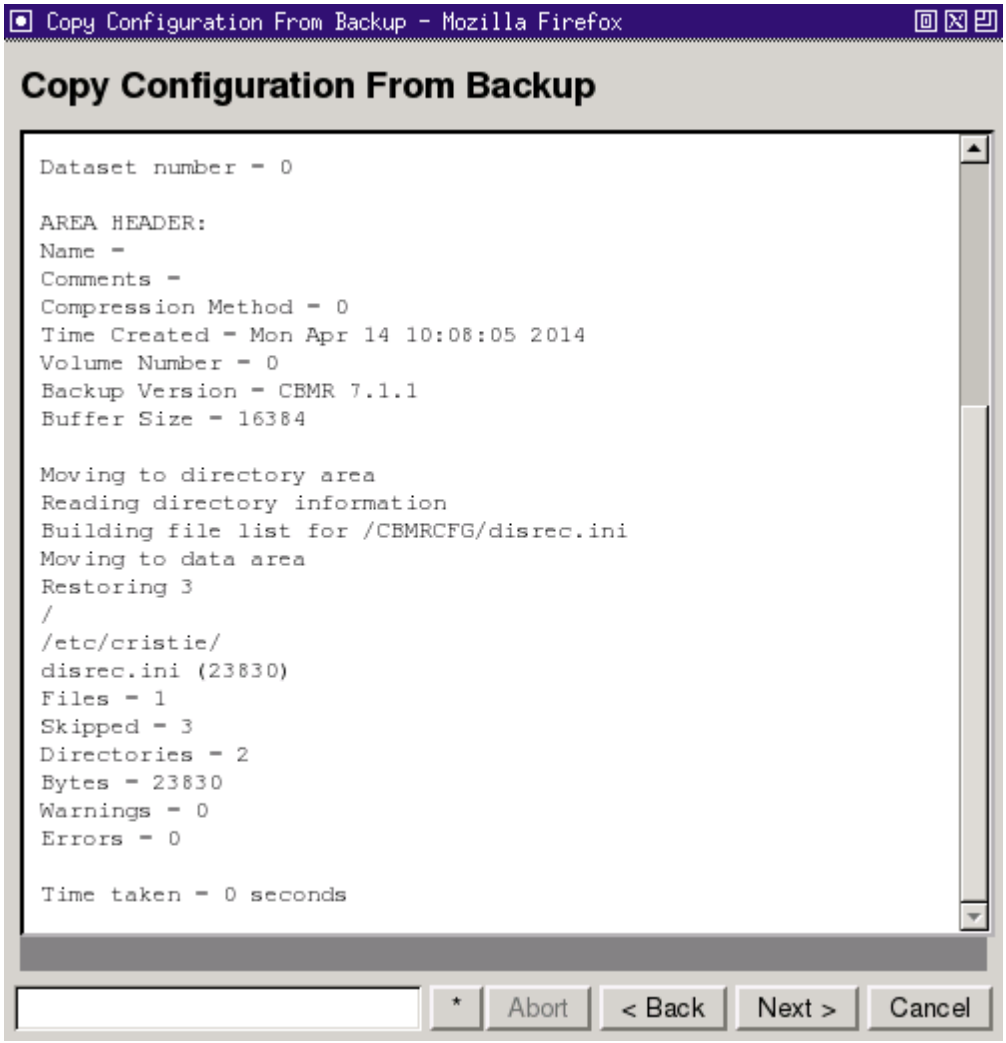

You can specify the version of the backup to be used (if you have multiple versions stored). Click the dropdown menu and select the one you want.

If the backup is encrypted, you should select the **Encryption Key Type** drop-down menu, select the correct encryption, then enter the correct Encryption Key.

*Note: under normal circumstances you should leave the 'Dataset Number' as 0*

Click Next to continue.

You will then be presented with a screen which summarises the copying of the Configuration from the backup file you just selected.




Click Next to continue.

Further details on the Recovery process are included in **Continuing the Recovery**.

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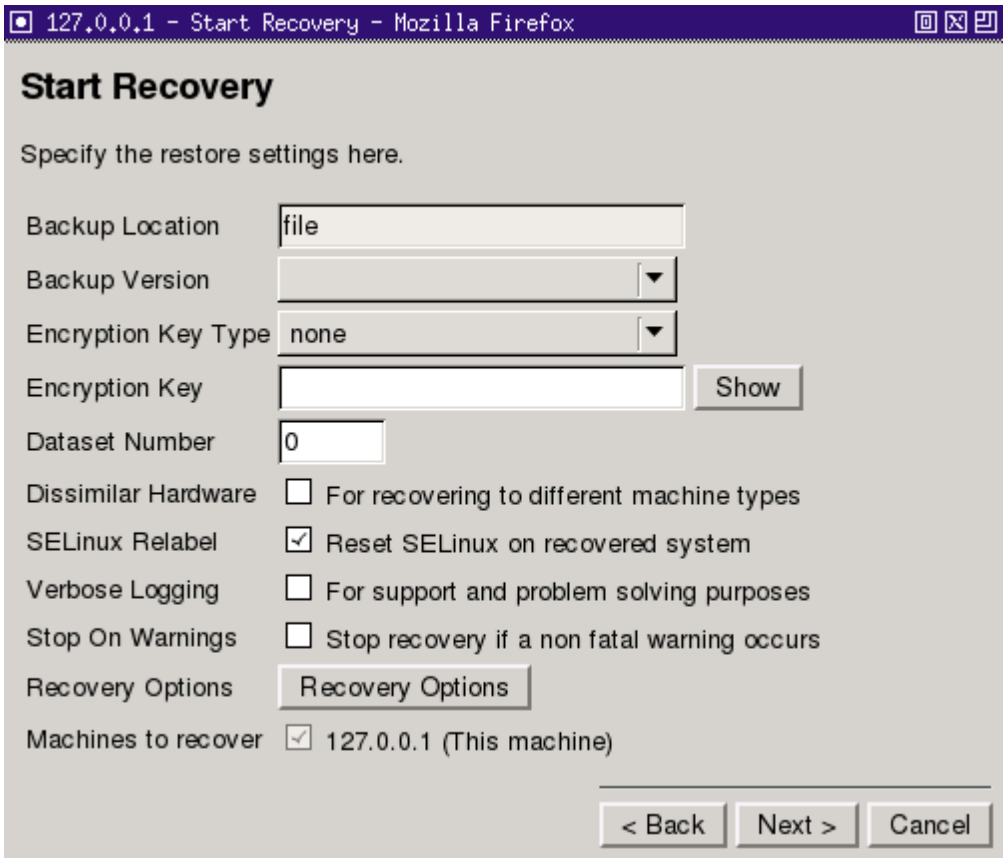
## 5.3 Continuing the Recovery




The **Start Recovery** screen contains the previously specified information:

- **Backup Location**
- **Backup Version** (if previous versions exist)
- **Encryption options**
- **Dissimilar Hardware support**
- **Recovery Options**

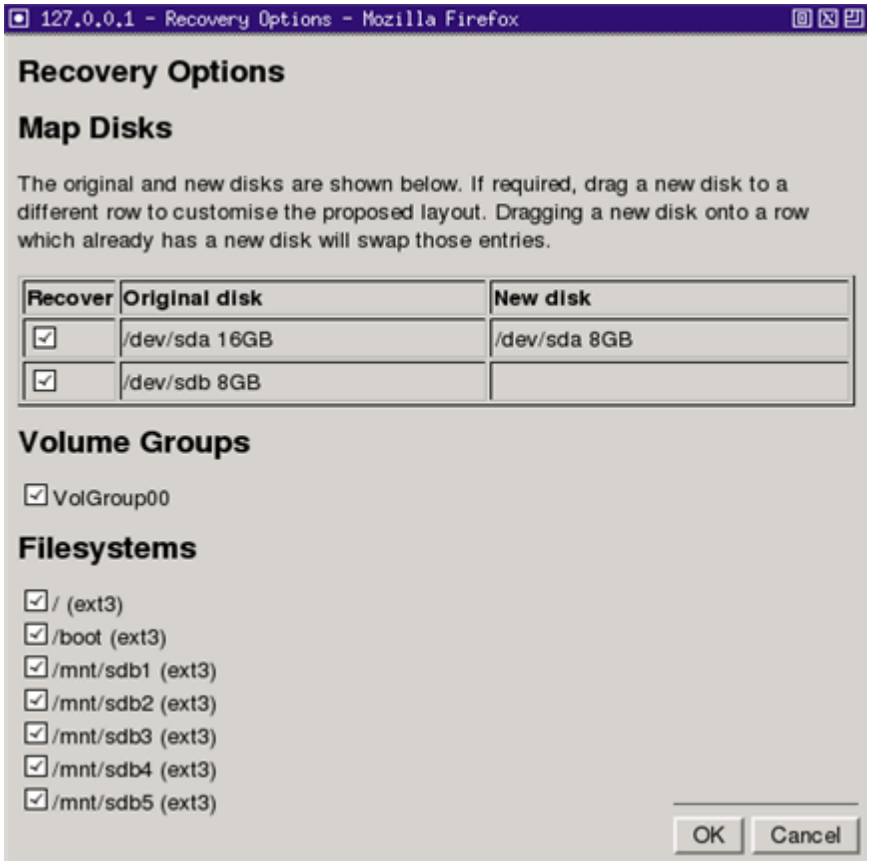
You should select the relevant **encryption options** from the dropdown menu if you chose to encrypt your backup earlier.

If you are **not** recovering the dissimilar hardware, you must **un-check** the box for Dissimilar Hardware Support. Not doing so can cause problems when restoring to similar hardware.

***Note: if you are recovering to dissimilar hardware, CBMR will find the required module(s) automatically. Normally this will happen with no further user intervention. If CBMR cannot find the required module, you will be prompted at the end of the recovery to provide a location that contains the required module(s).***

SELinux Relabel is required to ensure successful recovery of your system. **Do not** untick this box unless instructed to do so by Cristie support

If you wish, you may customise your disk layout by clicking on the **Recovery Options** button.




When you are satisfied that all options are correct, click OK to confirm.

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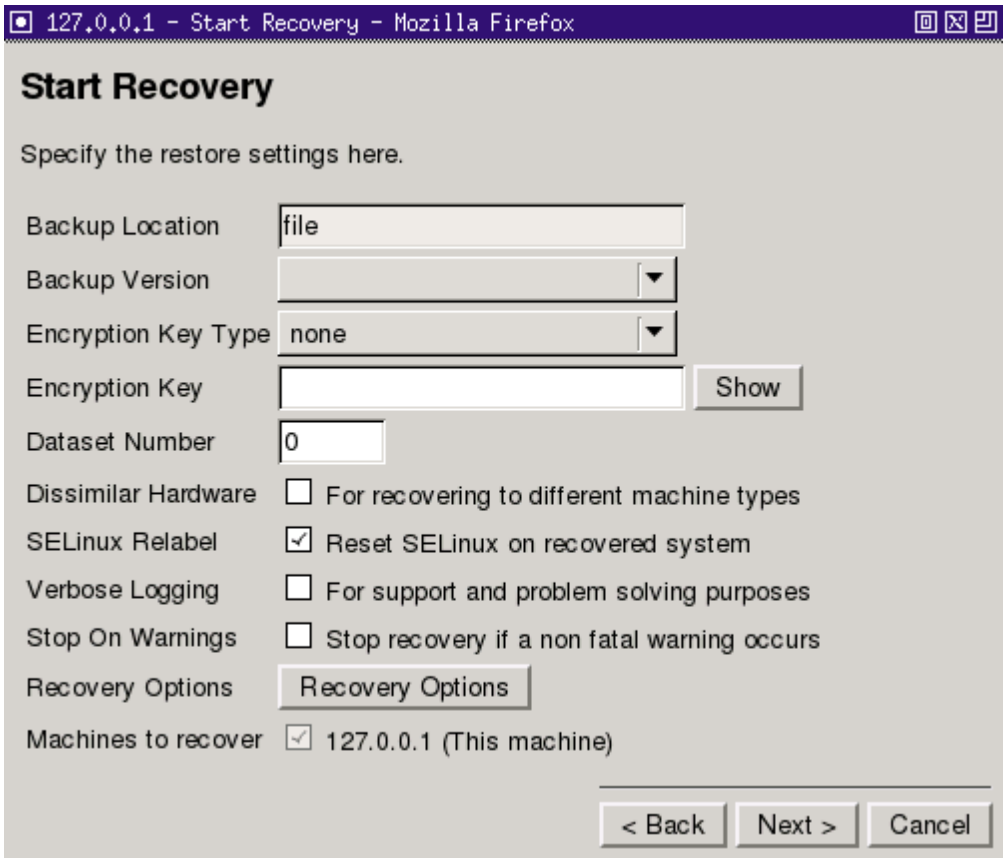
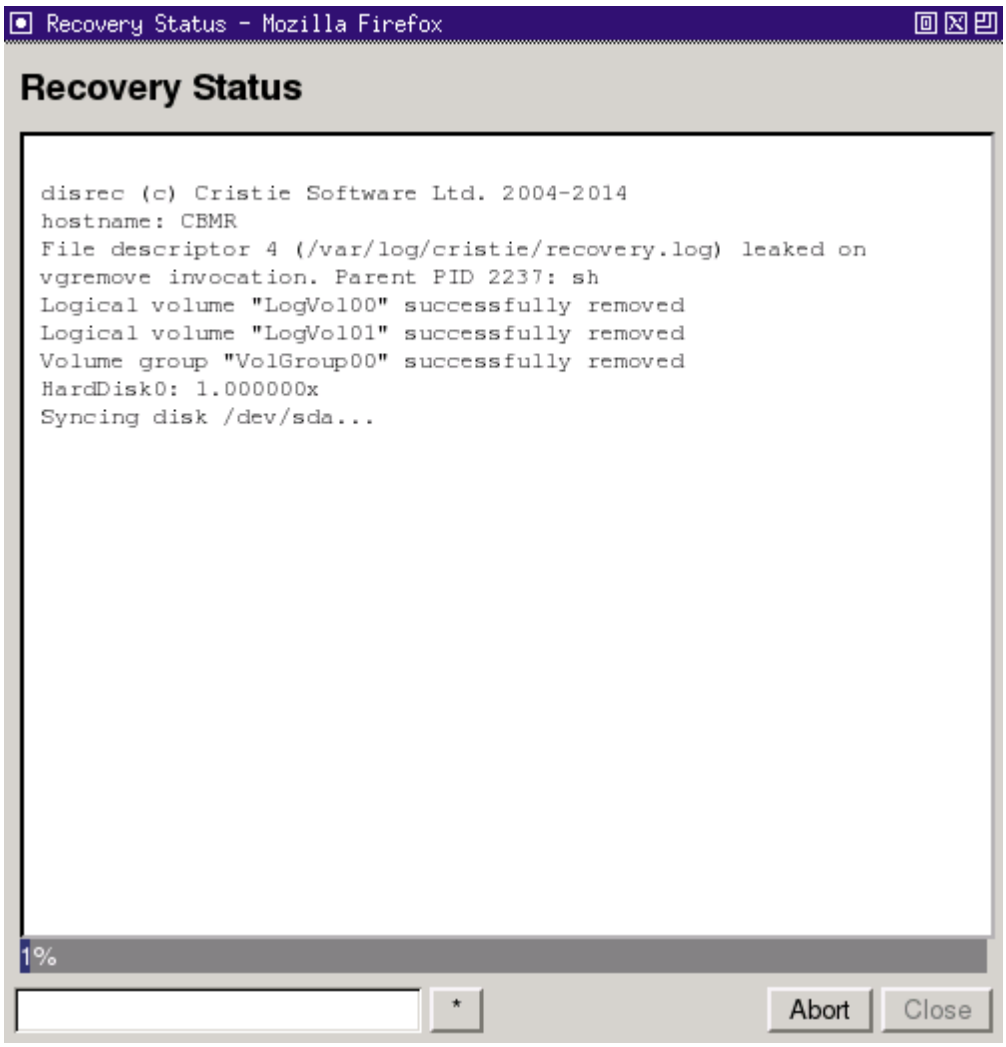
To begin your recovery, click Next> on the **Start Recovery** menu:




The recovery will commence.

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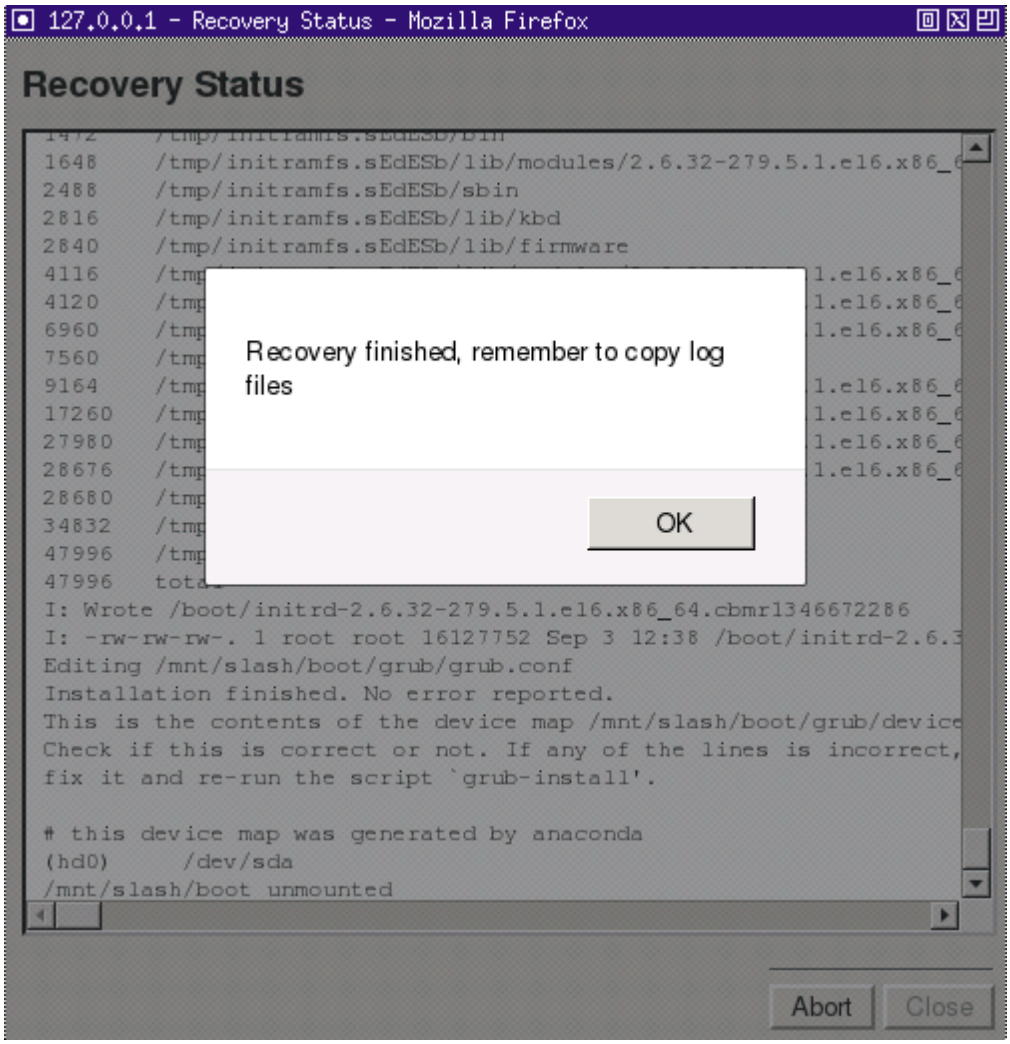
When the recovery has completed, it will prompt you to copy the log files:


127.0.0.1 - Recovery Status - Mozilla Firefox
Recovery Status
1648 /tmp/initramfs.sEdESb/lib/modules/2.6.32-279.5.1.e16.x86_6
2488 /tmp/initramfs.sEdESb/sbin
2816 /tmp/initramfs.sEdESb/lib/kbd
2840 /tmp/initramfs.sEdESb/lib/firmware
Recovery finished, remember to copy log files
OK
I: Wrote /boot/initrd-2.6.32-279.5.1.e16.x86_64.cbmr1346672286
Editing /mnt/slash/boot/grub/grub.conf
Installation finished. No error reported.
This is the contents of the device map /mnt/slash/boot/grub/device
Check if this is correct or not. If any of the lines is incorrect,
fix it and re-run the script `grub-install'.
# this device map was generated by anaconda
(hd0) /dev/sda
/mnt/slash/boot unmounted
Abort
Close

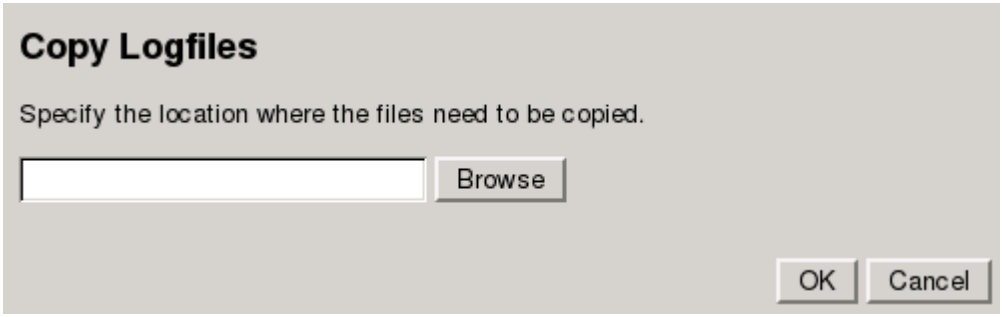
Select OK, followed by Close to return to the Main Recovery menu.

# Copy Log Files

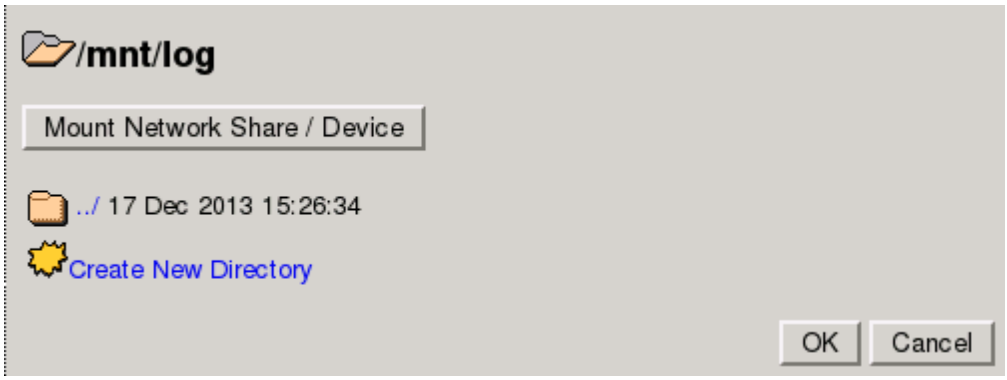
**You should now copy your log files to a separate location where they can be accessed.**

Select the icon from the **Cristie Recovery Console** main menu.

Click Browse to select a location to copy the log files to.




Here you will have to option to mount a network drive.




Ensure this is a location which can be easily accessed in case there is a need to email the log files to Cristie for support purposes.

***Note: log files are essential if you require support from Cristie. They detail exactly what has happened during the recovery on your system. Without them, it is very difficult for Cristie to offer meaningful support.***

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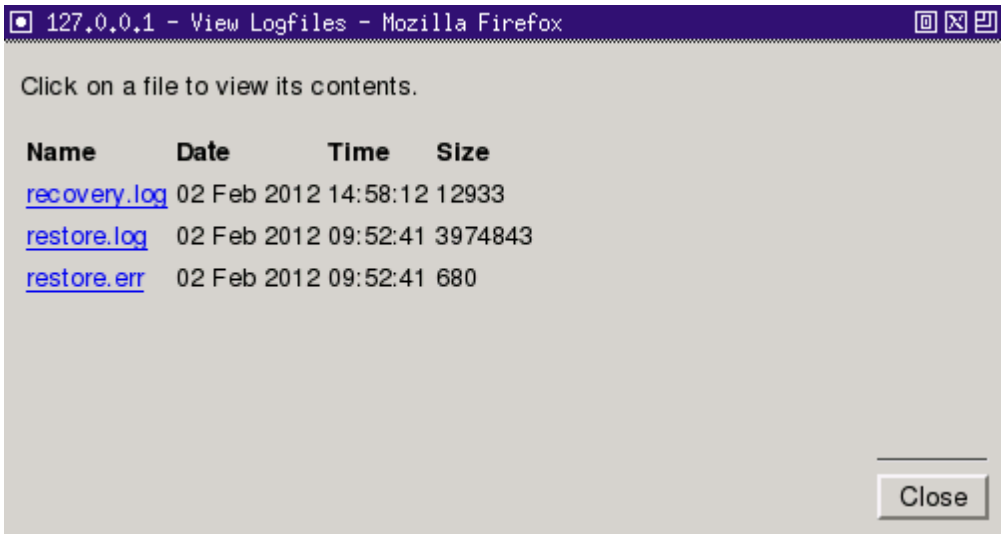
## View Log Files

To view log files, select the icon from the Main Menu. This will display the list of logfiles:

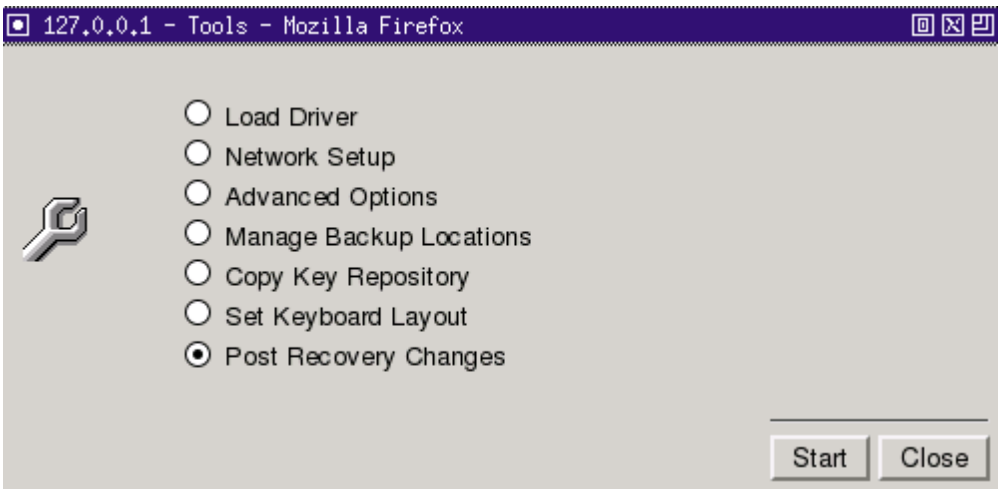

127.0.0.1 - View Logfiles - Mozilla Firefox
Click on a file to view its contents.
Name Date Time Size
recovery.log 02 Feb 2012 14:58:12 12933
restore.log 02 Feb 2012 09:52:41 3974843
restore.err 02 Feb 2012 09:52:41 680
Close

Click on the log you wish to view. Check the summary information at the bottom of the recovery status report for any errors.

Click Close to finish.

## Post Recovery Changes

If you wish to change the Network Settings in advance of rebooting, select **Tools** from the Main Menu, then **Post Recovery Changes**:



Select the required Network Configuration tool.

Use the selected Network Configuration tool, to enter the required settings or hostname for the recovered system and save your changes.

***Note: Select the Network editor that was used on the original system to configure the Network interfaces..***

Click Close to return to the **Cristie Recovery Console** main menu.

You should now restart the recovered machine by clicking on the **Cristie Recovery Console** menu.

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# 6 Cristie Technical Support

If you have any queries or problems concerning your Cristie Bare Machine Recovery product, please contact **Cristie Technical Support**. To assist us in helping with your enquiry, make sure you have the following information available for the person dealing with your call:

- CBMR Version Number
- Installed OS type and version
- Any error message information (if appropriate)
- Description of when the error occurs
- All Cristie log files relating to the source or recovery machine. This is very important to help us provide a quick diagnosis of your problem

## Contact Numbers - Cristie Software (UK) Limited

| | |
|---|---|
| **Technical Support** | +44 (0) 1453 847 009 |
| **Toll-Free US Number** | 1-866-TEC-CBMR (1-866-832-2267) |
| **Sales Enquiries** | +44 (0) 1453 847 000 |
| **Email** | cbmr@cristie.com |
| **Web** | www.cristie.com |

## Support Hours

05:00 to 17:00 Eastern Standard Time (EST) Monday to Friday

Out-of-Hours support available to customers with a valid Support Agreement - Severity 1 issues* only

UK Bank Holidays** classed as Out-of-Hours - Severity 1 issues only.

***Severity 1 issues are defined as: a production server failure, cannot perform recovery or actual loss of data occurring.***

****For details on dates of UK Bank Holidays, please see www.cristie.com/support/***

Cristie Software Limited are continually expanding their product range in line with the latest technologies. Please contact the **Cristie Sales Office** for the latest product range. Should you have specific requirements for data storage and backup devices, then Cristie's product specialists can provide expert advice for a solution to suit your needs.